REMARKS

Applicants wish to thank the Examiner for withdrawing the finality and the rejections of the previous office action. Please reconsider the instant application in view of the above amendments and the following remarks.

Status of the claims

Claims 1 – 24 are currently pending. Claims 1, 11, and 19 are independent. The remaining claims depend, directly or indirectly, from the independent claims. Claim 1 has been amended in this instant Reply.

Amendments to the claims

Claim 1 has been amended to recite "spur gear mechanism" instead of "spur gear means" to further clarify the present invention. Support for this amendment can be found, for example, on page 3, line 1 of the originally filed specification. No new matter has been added.

Rejections under 35 U.S.C. §112, second paragraph

Claims 1 – 24 stand rejected under 35 U.S.C. §112, second paragraph as being incomplete for omitting essential elements which amounts to a gap between the elements.

Specifically, the Examiner asserts that the claims should recite additional elements in order for the claimed invention to properly function as a dual rotary incubation station. In particular, the Examiner alleges that for each of the "spur gear means" to rotate the corresponding wheal, the gear drivers and the motors that move them need to be recited. The Examiner further alleges that the claims are directed to an incubation station and yet there is nothing recited in this station to distinguish it from a storage rack. The Examiner reasons that without a means for

rotating (the gear drives) and some means for heating or cooling the vessels, it does not appear that the claimed station can accurately be termed an "incubation" station.

Applicants respectfully disagree with the Examiner's reasoning. With respect to the Examiner's assertion that the claims have omitted explicit recitations of "gear drivers and motors," Applicants call the Examiner's attention to independent claims 11 and 19, wherein, contrary to the Examiner's assertion, the claims explicitly recite a rotary incubation station of a chemical analyzer comprising "...means for rotating said outside rotary wheel, including a first spur gear driver engaged with said spur gear teeth of said outside rotary wheel..."

With respect to independent claim 1, Applicants also disagree with the Examiner that the functional limitation "spur gear means" omits essential elements. However, to expedite prosecution of the application, Applicants have amended claim 1 to recite "spur gear mechanism" to further clarify that the rotary incubation station of claim 1 comprises spur gear mechanisms for rotating the rotary wheels. It will be readily recognized by one of ordinary skill in the art that the phrase "spur gear mechanism for rotating rotary wheel" conveys to a person skilled in the relevant art the totality of a spur gear based mechanical contraption that is capable of rotating the corresponding rotary wheel, including spur teeth and other associated elements such as a step motor exemplified in the specification (page 6, line 7 of the specification). Applicants submit that no essential elements are omitted therein.

With respect to the Examiner's assertion that without reciting some means for heating or cooling, Applicants' claimed invention cannot be accurately termed an incubation station, Applicants also respectfully disagree with the Examiner on this point. While means for heating or cooling can certainly be included in Applicants' rotary incubation station, such elements are not essential. For instance, incubation of a chemical reaction that has an optimal rate at room temperature does not require heating or cooling, therefore, there is no need to have cooling or heating

means under such circumstances; merely allowing the reaction to sit at ambient temperature on the incubation wheel will have achieved the "incubation" function. Hence, without explicitly requiring the cooling and heating means, the term "incubation station" will still accurately describe the apparatus.

Moreover, because some embodiments of the present invention do not require heating and cooling, requiring the claims to recite heating and cooling means, as the Examiner suggests, will unjustly restrict the scope of the claims to which Applicants are entitled.

In view of the foregoing, Applicants respectfully submit that the claims, as they current stand, meet all the requirements of 35 U.S.C. §112, second paragraph. Accordingly, withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. §103(a)

Claims 1 – 24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Jakubowicz (U.S. 5,244,633). Upon careful review of the cited reference, Applicants respectfully submit that Jakubowicz cannot render claim 1 obvious because it does not teach or suggest each and every limitations of the claims (MPEP §2143), and because modifying the cited prior art to arrive at the claimed invention will render the prior art unsatisfactory for its intended purpose (MPEP §2143.01 (V)). Applicants respectfully detail their traversal of this rejection as follows.

With respect to claim 1, the claim recites a rotary incubation station of a chemical analyzer, comprising:

a. a platform;

b. a generally circular ring-shaped outside rotary wheel having a plurality of nesting locations for washing and reading vessels;

c. means for positioning said outside rotary wheel on said platform, allowing said outside rotary wheel to rotate;

d. a generally circular **disc-shaped inside rotary wheel** [emphasis added] having a plurality of nesting locations for incubation and

storage of said vessels;

e. means for positioning said inside rotary wheel on said platform inside said outside rotary wheel, allowing said inside rotary wheel to rotate;

f. first spur gear mechanism for rotating said outside rotary wheel including a plurality of spur gear teeth on the inner periphery of the outside rotary wheel, wherein the first spur gear means allows accurate control of the rotation of said outside rotary wheel;

g. second spur gear mechanism for rotating said inside rotary wheel independent of the rotation of said outside rotary wheel, the second spur gear mechanism comprising a plurality of spur gear teeth on the outer periphery of the inside rotary wheel and allowing accurate control of the rotation of said inside rotary wheel; and

h. two pick and place assemblies assembly for transferring said vessels between the inside rotary wheel and outside rotary wheel.

Jakubowicz discloses an incubator comprising two independently driven **incubator rings** [emphasis added], each holding and transferring a liquid-containing cuvette between processing stations. The incubator of Jakubowicz requires at least one reagent addition station disposed permanently adjacent to each of the two rings (see abstract and figures of Jakubowicz).

In rejecting claim 1, the Examiner states that the incubator of Jakubowicz differs from the incubation station of claim 1 only in the pick-and-place assemblies and the placement of the gears for driving the rings, and then asserts that using pick-and-place assemblies would have been obvious to one skilled in the art as such assemblies would prevent spilling of the cuvettes' content.

Applicants respectfully disagree with the Examiner's argument for at least two reasons. First, in addition to the two differences noted by the Examiner between the two incubators, the incubation station of the present invention further differs from the incubator of Jakubowicz in at least several other crucial aspects.

For example, claim 1 recites that the incubation station has an inside rotary wheel having a generally circular **disc-shape** and one outside rotary wheel having a **ring-shape**. In contrast, the incubator of Jakubowicz has two **incubator rings**, each having at least one reagent addition station permanently disposed adjacent thereto. Thus, Jakubowicz also fails to teach at least the **disc-shaped** inside rotary wheel limitation.

In the present invention, the ring-disc configuration has many advantages over the cited prior art, including providing a compact arrangement for the reactions which requires less surface area for thermal control. In this arrangement, reaction vessels may be densely packed on the disc-shaped incubation wheel for easy access and temperature control, while the outside ring-shaped wheel can be independently rotated for processing the reaction vessels disposed thereon. By storing reaction vessels on the disc, the vessels are addressable by their locations on the disc, allowing them to be randomly accessed. This feature, in turn, allows simultaneous processing of reaction chemistries that require different incubation times. In contrast, the incubator of Jakubowicz follows a step-wise operation (see column 8 and figure 18.) This mode of operation, while well-suited for assembly-line like high-throughput processing, lacks the flexibility of the present invention to accommodate different incubation time requirements simultaneously.

Second, with respect to the Examiner's assertion that using pick-and-place assemblies in the incubator of Jakubowicz would have been an obvious substitution, Applicants also disagree. Jakubowicz teaches that its incubator is to solve the problem of throughput. It solves this problem by using two (or a plurality of) incubator rings to form an assembly-line style of reagent processing assembly, thereby, allowing the incubator to take advantage of parallel processing to achieve the desired increase in reaction processing throughput. Accordingly, the dual (or multiple) ring design is an essential element of Jakubowicz that cannot be removed without losing the high-throughput advantage. Because of this assembly-line like processing, all the structures of Jakubowicz are designed to support the process in a

lock-step manner. The transfer mechanism of Jakubowicz is strategically positioned at a single point tangent between the two rings (figure 4 and 19) to facilitate the lock-step processing of reaction vessels. The reagent addition station is also similarly positioned to enable step-wise processing. Jakubowicz does not teach or suggest, or even offer a hint that its incubator is capable of using pick-and-place assemblies to transfer reaction vessels between the rings. Thus, it is not clear why one skilled in the art would want to employ a pick-and-place assembly in Jakubowicz's high-throughput incubator. In light of the operating principle of Jakubowicz's incubator, Applicants submit that while a pick-and-place assembly has the advantage of reducing spillage, one of ordinary skill in the art will readily recognize that the modification proposed by the Examiner is actually not workable because such an assembly would have to pick up a reaction vessel from one ring and place it on the other, resulting in a much longer traveling time for the vessels, which is completely counter to the purpose of Jakubowicz's "high-throughput" incubator. Thus, Applicants submit that the use of pick-and-place assemblies in the incubator of Jakubowicz is not only un-obvious, but is in fact not workable as it would render the prior art device unsatisfactory for its intended purpose (MPEP §2143.01 (V)).

Moreover, although the Examiner is silent with regard to the disc-shaped inner wheel, Applicants note that for reasons similar to the pick-and-place assemblies, replacing the inner ring of Jakubowicz with a disc would also render the prior art device unsatisfactory for its intended purpose because Jakubowicz also teaches that the center of the rings has a hollow "dumping" area into which spent reaction cuvettes may be dumped (see Figures 15, 16 and the associated text). Thus, replacing the inner ring with a disc will clearly block the dumping area and render the dumping function inoperable.

Last, but not least, in those embodiments where magnets are used (see figure 2A, item 8 and paragraph [0025]), an incubation station of the present invention also has the advantage of having the option to remove such peripheral features from

the main disc incubation area (Figure 3, item 16) for assays where magnetic particles are part of the reaction. Such capability is critical in order to prevent undesired effects due to extraneous magnetic fields from the magnets. On the other hand, in order to allow proper magnetic particle separation/retention, magnetic fields may be configured in an incubator of the present invention to be present in the area of particle washing.

In short, Jakubowicz cannot render claim 1 obvious because it does not teach or suggest at least the disc-shaped inside rotary wheel limitation and the pick-and-place assemblies limitation, and also because modifying the incubator of Jakubowicz to meet these limitations will render the incubator of Jakubowicz unsatisfactory for its intended purpose (MPEP 2143.01 (V)).

In view of the foregoing, Applicants respectfully submit that Jakubowicz clearly cannot render claim 1 *prima facie* obvious. Therefore, claim 1 is patentable over Jakubowicz.

For at least the same reasons, dependent claims 2 – 10 are also patentable over Jakubowicz.

With respect to independent claims 11 and 19, they both recite at the same "disc-shaped rotary wheal" and "pick-and-place assemblies" limitations, therefore, they are both patentable over Jakubowicz. Dependent claims 12 – 18 and 20 – 24 are also patentable over Jakubowicz for at least the same reasons.

Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

Applicants believe that this Reply is responsive to all outstanding issues and places the application in condition for allowance. Reconsideration and allowance of the application, as amended, is requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (310) 789-5100 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
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